FY-2001 PROPOSED SCOPE OF WORK for: **Project #:** 85C
Colorado River Basin Channel Monitoring

Lead Agency: Water Acquisition Committee

Submitted By: George Smith
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Principal Investigator: Doug Osmundson (303) 970-245-9319

Category:
__Ongoing project
X Ongoing-revised project
__ Requested new start
__ Other (explain)

Expected Funding Sources:
X Annual funds
__ Capital funds

I. Title of Proposal:

Upper Colorado River Basin Channel Monitoring

II. Relation to RIPRAP:

Colorado River Action Plan: Mainstem
I.A.5.i.(2) Coordinated Reservoir Operations: Implement, evaluate process & hydrology, and provide annual report

Green River Action Plan: Mainstem
I.A.I Identify year-round flows

Green River Action Plan: Yampa and Little Snake Rivers
I.C.2. Initially identify year-round flow needs for recovery
I.D.1.b. Update flow recommendations to include flows from the Little Snake River.

III. Study Background/Rational:

During the past eight years, a cooperative channel monitoring effort has proven to be successful in shedding new insight on top habitat-dependent processes and issues. This approach has resulted in a considerable amount of information being collected and analyzed at a relatively low cost to the Recovery Program. The approach has taken advantage of previous efforts and has capitalized on cooperative efforts, available data, and expertise within the Recovery Program to provide information used to develop flow

recommendations and design habitat improvement projects. That part of the channel monitoring program for FY-2001 covered in this scope of work is designed to:

a. Continue monitoring depth-to-embeddedness at each of 16 sites in the Grand Valley.

IV. Study Goals:

The goal of the channel monitoring program is to support the efforts of the Recovery Program in identify historical trends, developing flow recommendations, restoring flooded bottom lands, and monitoring physical conditions of the rivers in the Upper Colorado River Basin.

V. Study Area:

The Colorado River in the Grand Valley, the Green River from Flaming Gorge Dam to the Colorado-Green River confluence, the Yampa River from Deerlodge Park to the Green River confluence, and the Snake River from River Mile 38 to the confluence with the Yampa River.

VI. Study Method/Approach:

In the Grand Valley, baseline data for cobble embeddedness was acquired during 1996-1997 (Osmundson and Scheer 1998) and has been monitored in each year since then (1998-2000). Thus, by the end of 2000, we will have 5 years of embeddedness data. This work will continue as planned through 2002. The monitoring program consists of taking 20 measurements of depth-to-embeddedness at each of 16 sites in the Grand Valley on 5-6 sampling dates each year. In addition, we propose to include sampling of invertebrates at our embeddedness monitoring sites beginning in 2001. This revision is described in Task 2 below.

VII. Task Description and Schedule:

1. Continue monitoring cobble embeddedness in the Grand Valley portion of the Colorado River on 5-6 sampling dates each year. Twenty measurements of depth-to-embeddedness will be taken at each of 16 sites in the Grand Valley on each date. One date will be in late March prior to runoff; 1-2 dates will be on the declining limb of the spring hydrograph; and three dates will be during the late summer/early fall base flow period. Wolman pebble counts (rock size frequency distribution) will be taken at the 15 sites twice yearly (once to correspond to the runoff embeddedness samples and once for the base flow samples). The results of this work will be incorporated into the annual channel monitoring report.

2. In addition to the physical measurements, invertebrate sampling will be conducted at each of the sites on the three summer/fall baseflow sampling dates. A modified Hess sampler will be used to collect invertebrates. Three samples will be collected at each embeddedness sampling site (3 samples x 16 sites x 3 dates = 144 samples

per year. Total biomass of invertebrates will be analyzed in the lab. This information is critical to quantifying the biological link between physical substrate characteristics and food base production. To date, we have only year-to-year data on changes in substrate embeddedness in relation to discharge, but do not have the data to quantify how these changes affect invertebrate production and ultimately the carrying capacity for the fish community. This additional sampling will allow us to discern year-to-year changes in invertebrate production and relate these changes to depth-to-embeddedness and flow regimes. After two years of data collection, results will be evaluated before additional years of data collection are proposed.

3. Prepare final report.

The initial work will be undertaken between October 2000 and September 2002 followed by a summary report in 2003.

VIII. FY-2001 Work Deliverables:

Annual progress reports will be prepared for the depth-to-embeddedness study followed by a draft summary report in March 2003.

Budget FY 2001:

Embeddedness monitoring:
Grand Junction CRFP

Task 1.	10,000	(labor and equipment)
Task 2.	6,310	($4,320 lab analysis [$30/sample]; $1,500 field labor, $490 Hess sampler purchase in first year).
Task 3.	12,000	Labor (analyses, writing)

IX. Budget Summary:

FY-2001:	$ 16,310
FY-2002:	$ 15,820
FY-2003:	$ 12,000
Total:	$ 44,130

X. Reviewers: Geomorphology Peer Review Panel 1998.